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DESCRIPTION OF A LOWER JAW OF *TETRABELODON SHEPARDII*

Leidy.

BY E. D. COPE.

This species has been known hitherto by a third inferior molar only. This has been described or figured at the following places of reference:

Mastodon shepardii Leidy, Proc. Acad. Philadelphia, 1870, p. 98; 1872, p. 472. Cope, American Naturalist, 1884, p. 524.

Dibelodon shepardii Cope, Proc. Amer. Philosoph. Soc., 1884, p. 5, partim.

Mastodon observus Leidy, partim, Report U. S. Geological Survey Terrs. I, p. 330, Pl. XXI, 1873.

A lower jaw of this species, lacking the condyles and supporting the second and third true molars, was taken from the bluff in Crosby County, Texas, from the same excavation that yielded the *Pliauchenia spatula* Cope, and within fifty feet of that at which the tooth of the *Dibelodon praecursor* was obtained. It came into possession of Mr. M. M. Cox, of Estacado, from whom I obtained it by purchase after my return from Texas. The acquisition of this specimen is important as enabling me to determine the true characters of the species. Besides the last inferior molar, Leidy has referred to it provisionally a fragment of a tusk, which, like the molar, came from California.

The second true molars are much worn, but they show, as was to have been expected from the character of the third molar, only three cross-crests without a rudimental fourth. The third true molar exhibits exactly the simple characters of the typical specimen described by Leidy; that is, it has four well separated cross-crests, and a very rudimental heel. The external half of each cross-crest wears into a trefoil, while the internal half is simple and undivided, and is a little anterior in position to the external half. The tooth continues its width posteriorly, so that the transverse diameters at the first and fourth cross-crests are equal. A marked character of the species is the elevation of the anterior part of the ramus and the decurvature of the symphysis, from which it results that the superior face of the symphysis, or the spout, descends very steeply to its extremity from the second true molar quite as in the proximal part of the spout of *Dinotherium*. It has a very short horizontal por-

tion anterior to the second true molar to represent the long horizontal production in *Dibelodon tropicus*, *Mastodon americanus*, etc. The symphysis is also much compressed above, so that the spout is narrow. The extremity of the spout is produced and contracted, and slightly recurved at the extremity, and there issues from the right side a well developed, vertically compressed mandibular tusk. On the left side is the empty alveolus of its counterpart, which was of much larger diameters than that of the right side. The portions of superior tusks found in California are stated by Leidy to possess an enamel band. As there are mandibular tusks, I refer the species to *Tetrabelodon* rather than to *Dibelodon* as heretofore.

The contracted symphysis steeply descending forward and expanding downward at the base from a posterior elevation, distinguishes this species from any of those of the genera *Tetrabelodon*, *Dibelodon* or *Mastodon* known to me. Hence there is no question of its difference from *T. productus* Cope, with which it was identified by Leidy,¹ where the symphysis is flat and much longer. In *Dibelodon cordillerarum*, according to D'Orbigny and Burmeister, the symphysis is not elevated behind, is produced and decurved at the extremity, and has a wide spout—all characters quite different from what is seen in *T. shepardii*. The symphysis is totally distinct in *D. tropicus*, where it is toothless and not decurved, and the last true molar is much more complex in the latter. I formerly identified the species so abundant in the Equus Beds of the valley of Mexico with this species. This determination must now be reconsidered, since the form of the mandibular symphysis is entirely different; there is no mandibular tusk, and the last lower molar is not identical in form,² though I formerly thought it not so different as to preclude the possibility of the species being identical did no other differences exist. The differences observed in this tooth may, however, be of specific value. The relative width of the crown is greater, especially anteriorly, and the lateral borders of the latter are not parallel, as in *T. shepardii*, but converge posteriorly, as in *M. praeursor*. The lobes of the cross-crests are opposite, as in the latter species. From *M. praeursor* this tooth differs in the more tubercular and less crest-like character of the cross-crests, and in their more profound division on the median line, especially in the third and fourth crests. *M. praeursor* is zygolo-

¹ By reference to it of specimens of *T. productus* from Santa Fe, New Mexico, in Report U. S. Geol. Surv. Terrs. I, 1873, p. 5.

² Proceeds. Am. Philos. Soc., 1884, p. 5.

phodont, while the Mexican species is bunolophodont. The various characters just mentioned also distinguish *M. praecursor* from *T. shepardii*. There is no evidence that the Mexican species possesses an enamel band on the superior incisors. My assertion to this effect was based on a specimen which presents this character which is preserved in the Esquela das Minas of Mexico. This specimen came from Tehuichila, in the State of Vera Cruz, from a formation which I subsequently determined to be of Loup Fork age, so that the identity of the species with that found in the Equus beds of the valley of Mexico is highly improbable. I therefore refer the latter to the genus *Mastodon* under the specific name of *M. oligobunis* Cope. It differs from *Dibelodon tropicus* in the smaller number of cross-crests of the last molar, and their greater simplicity, since they are not divided at all, and the external halves of the first and second only have anterior and posterior buttresses, in some of the individuals at least.³

Measurements of T. shepardii.

	M M.
Length of right ramus and symphysis.....	730
Length of right ramus to symphysis.....	515
Depth of ramus at posterior end of M. iii.....	135
Depth of ramus at anterior end of M. ii.....	175
Width across both rami at posterior end of M. iii.....	420
Width of right ramus at posterior end of M. iii.....	140
Width of both rami at base of symphysis	214
Width of spout at proximal end.....	65
Width of distal extremity of symphysis.....	120
Length of spout..	215
Diameters of M. ii { anteroposterior.....	125
{ transverse at middle.....	75
Diameters of M. iii { anteroposterior.....	164
{ transverse at middle.....	75
Diameters of right symphyseal tusk { vertical.....	68
{ transverse.....	27
Diameters left symphyseal alveolus { vertical.....	78
{ transverse	45

³ A figure of this tooth is given by Felix in *Paleontographica*, Vol. xxxvii, pl. 30, 1891.